

An historical perspective on: Conserving What?—The basis for nature conservation reserves in New South Wales 1967-1989

Philip Reed

New South Wales National Parks and Wildlife Service, P.O. Box 1967, Hurstville, 2220

John Whitehouse's paper (Whitehouse 1990) contains an interesting historical perspective on the formation of the New South Wales National Parks and Wildlife Service and its impact on the subsequent directions taken by the Service. It also seeks to raise debate on the underlying basis of nature conservation reserve establishment programmes, through the experience of the Service, and concludes that the conservation of ecological diversity deserves priority as the driving force for the nature conservation programme.

There is no doubt that there is a need for debate on the underlying basis of nature reserve establishment programmes. Organizations like the New South Wales National Parks and Wildlife Service should be intimately involved in such debates since, as Frankel (1974) suggests, even projecting ourselves a mere century ahead one must assume that many of the remaining species almost anywhere in the world will depend on organized protection for their survival.

However, there is another historical perspective which is integral to discussions on this subject — a history that largely occurred before the Service began and one that I believe severely restricts the establishment options, content, size and shape of nature conservation reserves. This history is the impact and legacy of European settlement, land-use practices and attitudes on the environment of New South Wales.

In New South Wales, European settlement and land-use grossly modified the landscape and, apart from causing the extinction of native animal and plant species, has left a legacy of 1 000s of remnant areas of native vegetation surrounded by highly modified land and fragmented and isolated native animal populations. Furthermore, the processes that produced these remnant areas and populations have not ceased and as such are likely to threaten their continued existence. As Lunney and Recher (1986) point out, without the pressures of economic growth there would be less need for nature conservation reserves, since large tracts of country would remain undeveloped or be used so infrequently as to ensure the survival of pre-European environments.

Adamson and Fox (1982) describe the arrival of Europeans as an apocalyptic event for Australian ecosystems and note that "In an instant on the geological

and evolutionary scales of time Australia was overtaken by the agricultural and industrial revolutions ... The magnitude and rate of these changes were unprecedented in the history of Australian organisms, and no other continent has experienced such rapid change".

By 1890, 98.5% of the land area of the state had been leased or alienated through land grants and sales (Statistical Register of New South Wales 1890). Whilst the total area leased and alienated subsequently declined as leased lands were returned to the Crown, the impact of the associated land-use practices on the New South Wales landscape and native plants and animals was dramatic and irreversible.

Between 1788 and 1921, 35.3 million hectares were ring-barked and partially cleared in New South Wales (Statistical Register of New South Wales 1921), which corresponds to 44% of the land area of the state [areas have been converted from acres to hectares; 1 acre = 0.405 ha]. However, Wells *et al.* (1984) estimate that only 77-88% of the state was originally covered with forests, woodlands and tall shrubs, which means that at least half of this area had been ring-barked or partially cleared by 1921. Clearing did not occur uniformly through this time or across the state. By 1892, 9.6 million hectares had been cleared. But between 1893 and 1921, 25.7 million hectares were ring-barked and partially cleared (Statistical Register of New South Wales 1892-1921). This represents an average of 2 515 hectares per day for 28 years. It also represents an area greater than England, Scotland and Wales together, which have a total area of 23 million hectares. It is remarkable that this clearing was done by hand, by a population a quarter of the current size.

Clearing was most prolific on the western slopes, central plains and Riverina, with 67% of the land area of these regions being ring-barked by 1921. Using information contained in Wells *et al.* (1984) study, Anon (1987) estimated that 95% of the original vegetation of the New South Wales sheep/wheatbelt had been cleared or grossly modified. The future of the remaining 5% of the original vegetation cannot be guaranteed.

Reed and Lunney (1990) have used the example of the koala to highlight the impact of these changes to the distribution and abundance of tree-dependent native



"Upper Orara, NSW 1912". The rapid transformation of forest to dairy is evident in this photo. The impact on fauna at the time was unrecorded.



"Upper Orara, NSW 1910". The dead ring-barked trees are still standing but with their eventual loss, the sense that this area was once forest disappears.



"Leongath, Vic 1910". The rapid expansion and clearing of the country occurred nearly simultaneously across Australia so the loss of fauna and potential national parks took place within one or two generations.

wildlife in New South Wales. They conclude that the loss of habitat resulting from the clearing of preferred tree species on the higher nutrient soils, now largely converted to farmland, was the overriding cause of the koala's decline in the state and remains the central issue in the conservation of the species.

Even in the areas where there was little direct destruction of the native species through ring-barking and clearing, gross modifications still occurred in association with settlement. In 1891, F. Turner, Botanist to the Department of Agriculture, wrote that to maintain "the production of high-class wool, . . . it becomes of vital importance to the population that more attention be paid to our native fodder plants and grasses than has hitherto been the case, to save some of them from extinction by a proper system of conservation, and even cultivation [since] . . . large tracts of country have been so overstocked, and, as a consequence, many valuable pasture plants have become so scarce, that it would take many years of careful conservation to bring them back to anything like their original state. Being so closely fed down, and often trampled down, their only means of reproducing themselves by seed is partially destroyed, and every year makes matters worse . . . It must naturally follow that, if this continued, the more valuable herbage will gradually give way and a less valuable one take its place, that is from an economic point of view. An instance of this is already taking place in the interior, where the pine scrub has already taken possession of thousands of acres of what was at one time splendid pastoral country" (Turner 1891). This warning went unheeded and worse was yet to come with the spread of rabbits.

Widespread clearing throughout New South Wales did not cease in 1921, but few records were kept. The important point to note is that European land-use practices greatly modified the landscape of New South Wales long before there was any concerted effort to develop a comprehensive system of nature conservation reserves, and no areas of the state have been left unaltered. The modifying land-use practices have not stopped, and this places a continuing pressure on those areas that have maintained at least some semblance of their pre-European character.

Some indication of the level of recent clearing activity throughout the state is available from agricultural censuses undertaken by the Australian Bureau of Statistics in five separate years between 1972 and 1980. Each of the census contained the same questions regarding the area of natural bush, scrub and forest partially or totally ring-barked, poisoned or cleared during the year, and the area of wetlands artificially drained during the same period. The 14 144 New South Wales' respondents

cleared 2.2 million hectares during the five years sampled (1972-73, 1973-74, 1975-76, 1978-79 and 1980-81), which represents an average of 431 801 hectares/year or 1 183 hectares/day. At the same time 168 826 hectares of wetlands were drained, which represents an average of 33 647 hectares/year. During the same period, only 1.2 million hectares were reserved for nature conservation throughout the state. Therefore, the area cleared and drained was over twice that reserved.

Between February 1984 and September 1989 the Western Lands Commission approved 497 clearing licence applications covering 477 135 hectares in the Western Division of New South Wales (Western Lands Commission, unpublished data). Whilst all of the area approved may not have been cleared, it gives an indication of the magnitude of change that is still permitted within the state. During the same period, only 95 724 hectares were reserved for nature conservation in the Western Division. Therefore, the area approved for clearing in the Western Division was almost five times that reserved.

A statewide land degradation survey undertaken by the Soil Conservation Service of New South Wales in 1988 has shown that 72% of the state is affected by some form of land degradation as a direct result of European land-use (Armstrong 1989). In the croplands, 89% of the area under cropping is affected by soil structure decline. Yet, we do not seem to have learnt from this experience. A recent paper released by CSIRO reports the proposed clearing of 30-50% of the 100 million hectares of poplar box woodlands in Queensland using an arboricide "Graslan" (Eckersley 1989). The problem of controlling the widespread, dense shrub regrowth in the Western Division of New South Wales has renewed interest in chemical and mechanical control methods. On 30 November 1989, *The Land* newspaper reported the availability of a new, more potent pelletised form of the arboricide "Velpar L", trials of other herbicides at high concentrations using gas-guns and the introduction of light-weight blade ploughs to control shrub growth. The widespread use of such chemical and mechanical control methods in New South Wales could seal the fate of native species, both plant and animals, that have already suffered dramatic reductions in distribution and abundance.

The Murray-Darling Basin Natural Resources Management Strategy (1989) states that vegetation clearance has resulted in widespread soil erosion, siltation, dryland salinity, discharge of saline ground waters to rivers, invasion by pest plants and animals and extinction of native plants and animals. The Strategy went on to recommend the revegetation of the Basin and controls

on further clearing. The revegetation has been calculated by CSIRO to require the planting of 12 billion trees (Eckersley 1989).

The current New South Wales reserve system is not representative and does not adequately conserve the plants and animals native to New South Wales (Benson 1987, 1989; Giles and Lim 1989; Hitchcock 1985; Pressey in press; Turner 1979). The reserves are geographically-biased within the state and have also been biased to those lands that presented minimal conflict for alternative uses and could be acquired at minimal cost. This is partly related to the pattern of land settlement which determined which lands remained largely uncleared, and partly due to the history of the development of the parks movement within New South Wales (see reviews by Goldstein 1979 and Turner 1979). In general, only the forested lands considered unsuitable for agriculture, being the poorest soil types, the least arable and/or having the most rugged topography, were left uncleared (Recher 1976; Reed *et al.* 1990) and they have largely remained in Crown ownership. These lands are the legacy that formed the basis of the nature conservation reserve system within New South Wales.

Seven of the 17 national and state parks reserved between 1879 and 1966 were within 150 kilometres of Sydney (Turner 1979). The first two national parks, Royal (1879) and Ku-ring-gai Chase (1894), were urban-orientated recreation reserves, rather than attempts to preserve the native bush (Turner 1979). Between 1894 and 1924, which bridged the major land-clearing phase in New South Wales, no further national parks were reserved (Turner 1979). Then between 1925 and 1966, a further eight national parks and seven state parks (New South Wales NPWS Annual Report 1966-67) were reserved as a result of the efforts of the volunteers in the National Parks and Primitive Areas Council (Dunphy 1979) and 52 faunal reserves were gazetted following the formation of the Fauna Protection Panel in 1949 (Fauna Protection Panel Annual Report 30 June 1967). This brought the total area reserved by 1966 to 813 622 hectares.

The launch of the New South Wales National Parks and Wildlife Service in 1967 heralded the beginning of a significant land acquisition phase. As Whitehouse (1990) points out, the Minister who established the Service, Tom Lewis, also established a Scientific Committee on Parks and Reserves in 1967. By 1971 an overview of the state had been completed, which recommended the basis of a system of parks and reserves (Scientific Committee on Parks and Reserves 1968, 1969, 1971a, 1971b, 1971c).

In hindsight, the Scientific Committee's terms of reference limited the scope of the Service's conservation



"Deniliquin, NSW 1922. 'Weraï' ". Sheep, in their millions, have had a massive impact on the soils, vegetation and consequently fauna habitat in western New South Wales.



"Adams St, Cootamundra, NSW 1915. Dust storm". One of the inevitable consequences of sheep and rabbit grazing presence was a stripping of all the vegetation and exposure of the soils to terrible erosion. Such a scene is symptomatic of appalling loss of wildlife.



"Deniliquin, NSW 1922. 'Weraï' ". Australian ecosystems have not evolved with hard-hoofed herbivores or such intensity of grazing. The deleterious impact was sudden, widespread and, to a large extent, irreversible.



"Naradhan, NSW 1926. Mallee rolling on 'Curraview' ". This scene was common throughout the mallee lands of NSW. Most clearing occurred before there was any reservation of this habitat.



"Cobar, NSW 1905". "The rabbit pest — two sides of a netting fence. Mr Rodier is in a sully on Tambua side, Oct. 05". The second quote, taken from the photo, is an understatement of the devastation to rural Australia caused by the rabbit.



"Naradhan, NSW 1926. Mallee flattened prior to scrapping on 'Curraview' ". The endangered status of the Mallee Fowl can be directly attributed to the disappearance of so much mallee country and the invasion of sheep, rabbits and foxes.

effort to an already biased sample of the state. Even though they were asked to "*advise on the optimum sample of the various ecosystems throughout the state which should be reserved for scientific purposes*", this was qualified by the statement "*from those lands still essentially in a natural state, or capable of being restored to something approximating a natural state*" (McMichael 1973). This qualification restricted the areas available for selection to only a relatively small percentage of the state and represented land that was left during the major land settlement and clearing phases. This does not necessarily mean that these areas have limited nature conservation value but they are a biased sample of natural environments and do not represent the best habitat or contain a representative sample of the native plants and animals of New South Wales. A large percentage of the areas proposed by the Scientific Committee have now been reserved by the New South Wales National Parks and Wildlife Service, and form the majority of the current nature conservation reserve system. The Service could therefore be acknowledged as having largely fulfilled the original reservation goals of the Scientific Committee, but as a result the Service has reserved a very biased sample of the state.

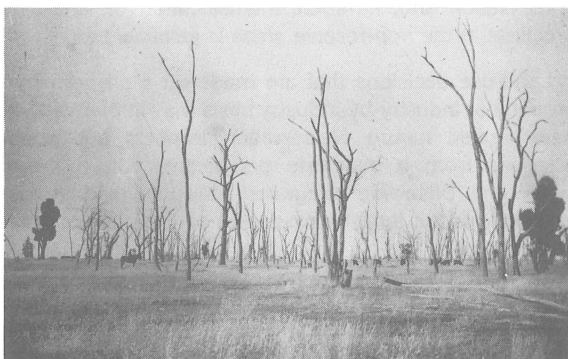
It may well be the case that the Scientific Committee were well aware of this problem, but that their brief constrained them to these remnant areas. In their final report, Scientific Committee on Parks and Reserves (1971c), a proposal was made to establish a "new category of reserve for the improvement of scenery and wildlife conservation in selected areas". The report stated that "there are many areas with landscape qualities and features of value as habitat for wildlife which do not qualify for setting aside as national parks or nature reserves because they are not natural, but which, nevertheless, should be conserved ... and will consist in most cases of a mixture of private and public lands although some comprise lands which are mainly in private ownership". The areas that the Committee thought required some special conservation status were devoted to a variety of agricultural and forestry uses. The Committee's recommendation has still not been effectively dealt with by any subsequent state government. It is interesting to note that this option is still being canvassed by one member of the Committee (see Recher 1990).

Much of the progress in reservation for nature conservation has been attained by access to vacant Crown lands. Between 1969 and 1983, 65% of the lands reserved by the Service were vacant Crown lands, 6% were revoked State Forests, 27% was acquired leasehold and only 2% was acquired freehold (Keane and Roberts 1983). But the vacant Crown land resource is being rapidly exhausted and is the subject of strong competition

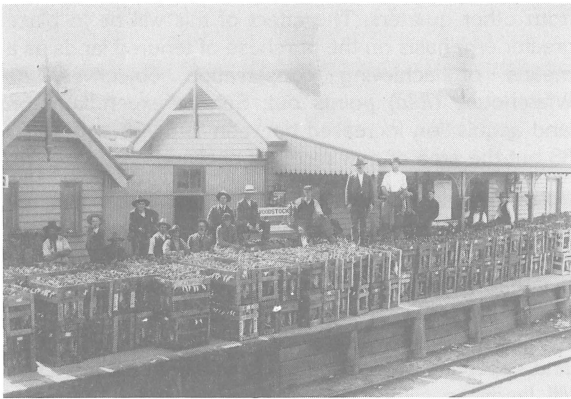
from other quarters. The effect of this will be to place greater emphasis on the purchase of tenured lands as a means of achieving conservation objectives. As Whitehouse (*ibid*) points out, Service expenditure on land acquisition increased between 1984/85 and 1987/88 but the area of new reserves declined.

Some areas of high nature conservation value are unlikely to be available for reservation as nature conservation reserves whilst other forms of land-use are regarded as being more important than nature conservation. As an example, the Soil Conservation Service of New South Wales' current classification scheme for rural land capability mapping (Emery undated) defines class VIII lands as cliffs, lakes or swamps and other lands unsuitable for agricultural and pastoral production. The recommended uses for such lands are "those compatible with the preservation of the natural vegetation, namely: water supply catchments, wildlife refuges, national and state parks, and scenic areas". These scenic lands, with a limited value for commercial exploitation, feature prominently in the national park system, though this is also partly a result of the limited definition for national parks in the Act, i.e. "the areas to be reserved as national parks are spacious areas containing unique or outstanding scenery or natural phenomena".

The lands classed I to VII by the Soil Conservation Service are of commercial value owing to their capacity to grow crops, graze stock or produce timber and as such have historically been poorly represented in the national park system. The lands, which include the alluvial plains, flood plains, coastal plains, drainage depressions, footslopes, historically supported the highest densities of native animals, and have generally been the most highly modified because of their commercial value. Therefore it is unlikely that spacious areas of these types will ever be available for reservation even at current market rates.



"Betric via Arian Park, NSW 1916. 'Gilead' in its rough state". A dying landscape providing little food or shelter for the native fauna.



"Woodstock, NSW 1906. 173 crates, each crate 18 pairs of rabbits". A transient trade in rabbits is no compensation for the long-term losses to the overused country of most of New South Wales.

To date, too little of the state has been set aside specifically for nature conservation and the remaining areas are being increasingly simplified through land management practices aimed at resource development and increased productivity. As Recher (1976) states "... our parks will increasingly be isolated in a sea of development, agriculture and intensive forestry". Even within the nature conservation reserves, species will be lost over time without specific interventionist management and many reserves will become progressively more isolated as the surrounding, non-reserve lands are developed.

The native plants and animals that occur outside the current reserve system remain very poorly conserved since protection is still largely based on restrictions on trading, picking or killing individual specimens, and habitat protection is still largely dependent on the benevolence of the landholder or land manager. Yet there is a perception in some parts of the community that the current reserve system is adequate for nature conservation and, as such, intensification of land-use practices in the non-reserve areas is justifiable.

Land-use decisions that are made on a property-by-property or industry-by-industry basis may in themselves have limited nature conservation impacts but when assessed from a statewide perspective can be very significant. Statewide integrated land-use planning is essential for the long-term survival of the native plants and animals.

These are serious issues, with potentially far-reaching implications for future generations. Without the support of the federal, state and local governments and the community as a whole, the future is bleak for nature conservation in New South Wales. As Recher and Lim (1990) point out, it is bleak because so few people can read the

past and see the present, and that the loss of Australia's wildlife has to date been a trivial event to the majority of Australians.

In conclusion, I believe that it is important to understand why the nature conservation reserve system is as it is, to acknowledge what options have been closed off as a result of historical changes and to highlight the importance of criteria other than naturalness in the selection of reserves, and the importance of non-reserve lands for nature conservation. The debate on the underlying basis of nature conservation reserve establishment programmes, as encouraged by John Whitehouse, would be even more relevant with this knowledge.

ACKNOWLEDGEMENTS

The opinions in this article are mine, but I am indebted to a large number of people for lengthy discussions that helped the development of these ideas. These people include: Ian Sim, Dan Lunney, Peter Hitchcock, Paul Adam and John Whitehouse.

REFERENCES

- ADAMSON, D. A. AND FOX, M. D., 1982. Change in Australasian Vegetation since European Settlement. Pp. 109-46 in "A History of Australasian Vegetation" ed by J. M. B. Smith. McGraw-Hill Book Company: Sydney.
- AGRICULTURE CENSUS, 1972-73 to 1980-81. Australian Bureau of Statistics: Sydney.
- ANON, 1987. "Murray-Darling Basin Environmental Resources Study". Murray-Darling Basin Ministerial Council: Canberra.
- ARMSTRONG, I., 1989. Launch of the Land Degradation Survey by the Hon. Ian Armstrong, MP, New South Wales Minister for Agriculture and Rural Affairs at Parliament House on Monday, 19 June 1989. Copy of speech notes held by New South Wales NPWS.
- BENSON, J. S., 1987. The effect of 200 years of European settlement on the vegetation of New South Wales, Australia: an overview. XIVth International Botanical Congress, West Berlin (abstract published in proceedings).
- BENSON, J. S., 1989. Establishing priorities for the conservation of rare or threatened plants and plant associations in New South Wales. Pp.17-82 in "The Conservation of Threatened Species and their Habitats" ed by M. Hicks and P. Eiser. Aust. Committee IUCN: Sydney.
- DUNPHY, M. J., 1979. The bushwalking conservation movement, 1914-1965. In "Parks and Wildlife Centenary Issue". Ed W. Goldstein. *Parks and Wildlife* 2: 54-64.
- DUYKER, E., 1983. Land use and ecological change in central New South Wales. *J. Roy. Aust. Hist. Soc.* 69: 120-32.
- ECKERSLEY, R., 1989. Regreening Australia: the environmental, economic and social benefits of reforestation. *CSIRO Occasional Paper* No. 3.

- EMERY, K. A. (undated). Rural land capability mapping. Soil Conservation Service of New South Wales: Sydney.
- FAUNA PROTECTION PANEL., 1960. Report of the Fauna Protection Panel to the Parliament of New South Wales, for the year ended 30th June 1960. Parliament of New South Wales: Sydney.
- FRANKEL, O. H., 1974. Genetic conservation: our evolutionary responsibility. *Genetics* **78**: 53-65.
- GILES, J. AND LIM, L., 1989. Conservation of the endangered native species of New South Wales: an assessment of current status, threats and requirements for maintenance of wildlife populations. Pp. 90-100 in "The Conservation of Threatened Species and their Habitats" ed by M. Hicks and P. Eiser. Aust. Committee IUCN: Sydney.
- GOLDSTEIN, W. (ed), 1979. Parks and Wildlife Centenary Issue. *Parks and Wildlife* **2**.
- HITCHCOCK, P. P., 1985. Nature Conservation Review: a situation report. NSW NPWS Unpublished report.
- KEANE, P. AND ROBERTS, G., 1983. Review of policies, priorities and programmes for nature conservation in New South Wales. Paper No. 64. The benefits and limitations of leasehold and vacant Crown land as a means of fulfilling nature conservation objectives. NSW NPWS unpublished report.
- LUNNEY, D. AND RECHER, H. F., 1986. The living landscape: an ecological view of National Parks and Nature Conservation. Pp. 294-328 in "A Natural Legacy" ed by H. F. Recher, D. Lunney and I. Dunn. Pergamon Press: Sydney.
- McMICHAEL, D. F., 1973. Further case studies in selecting and allocating land for nature conservation. Pp. 53-56 in "Nature Conservation in the Pacific" ed by A. B. Costin and R. H. Groves. ANU Press: Canberra.
- MURRAY-DARLING BASIN NATURAL RESOURCES MANAGEMENT STRATEGY, 1989. Background papers. Murray-Darling Ministerial Council: Canberra.
- PRESSEY, R. L. (in press). Towards a representative reserve system: is opportunism enough? In "Proceedings of the Third Fenner Conference on the Environment: Conservation in Management of the River Murray System — Making Conservation Count, Australian Academy of Science, Canberra, 5-7 September 1989.
- RECHER, H., 1976. An ecologist's view. The failure of our national parks system. *Aust. Nat. Hist.* **18**: 398-405.
- RECHER, H. F., 1990. Wildlife Conservation in Australia: State of the Nation. *Aust. Zool.* **25**: 5-11.
- RECHER, H. F. AND LIM, L., 1989. A review of current ideas of extinction, conservation and management of Australia's terrestrial vertebrate fauna. *Proc. Ecol. Soc. Aust.* **16**.
- REED, P. C. AND LUNNEY, D., 1990. Habitat loss: the key problem for the long-term survival of koalas in New South Wales. In "Koala Summit: Managing the Koala in NSW" ed by D. Lunney, C. A. P. Urquhart and P. C. Reed. Proceedings of the Koala Summit, Sydney University, November 7-8, 1989 NSW NPWS: Sydney.
- REED, P. C., LUNNEY, D. AND WALKER, P., 1990. A 1986-87 survey of the koala *Phascolarctos cinereus* (Goldfuss) in New South Wales and an ecological interpretation of its distribution. In "The Biology of the Koala" ed by A. K. Lee, K. Handasyde and G. D. Sanson: Surrey Beatty & Sons, Sydney (in press).
- SCIENTIFIC COMMITTEE ON PARKS AND RESERVES, 1968. Report No. 1. NSW NPWS: Sydney.
- SCIENTIFIC COMMITTEE ON PARKS AND RESERVES, 1969. Report No. 2. Park and reserve proposals, the coastal areas of NSW NSW NPWS: Sydney.
- SCIENTIFIC COMMITTEE ON PARKS AND RESERVES, 1971a. Report No.3. Park and reserve proposals, the tablelands and north coast of NSW. NSW NPWS: Sydney.
- SCIENTIFIC COMMITTEE ON PARKS AND RESERVES, 1971b. Report No.4. Park and reserve proposals, the western slopes and plains of NSW. NSW NPWS: Sydney.
- SCIENTIFIC COMMITTEE ON PARKS AND RESERVES, 1971c. Report No.5. Multiple use parks. NSW NPWS: Sydney.
- STATISTICAL REGISTER OF NEW SOUTH WALES, 1892-1922. New South Wales Government Printer: Sydney.
- TUCKER, R. P. AND RICHARDS, J. F., 1983. "Global Deforestation and the Nineteenth-century World Economy". Duke Press Policy Studies: Durham".
- TURNER, A., 1979. National Parks in New South Wales, 1879-1979; participation, pressure groups and policy. PhD. Thesis, Australian National University, Canberra.
- TURNER, F., 1891. "The Forage Plants of Australia." New South Wales Department of Agricultural: Sydney.
- WELLS, K. F., WOOD, N. H. AND LAUT, P., 1984. Loss of Forests and Woodlands in Australia: A summary by State, based on Rural Local Government Areas. *CSIRO Tech. Mem.* **84/4**.
- WHITEHOUSE, J. F., 1990. Conserving what?: the basis for nature conservation reserves in New South Wales. 1967-1989. *Aust. Zool.* **26**: 11-21.